

Abstract

Devices for cost-effectively performing in-vitro diagnostic chemical analyses at multiple distributed locations within a medical institution are disclosed. One object of this invention is to provide a network of distributed sensory devices that acquire sensor signals from blood specimens and deliver those signals through a connection to a central location for analysis by a general-purpose computer and generation of an analysis result. The analysis result is then sent to numerous locations on a network for display, including also possibly back to the location of signal acquisition. Cost-effective mobile sensing devices are also disclosed. The present system includes blood-sensor signal acquisition devices distributed throughout the hospital. The sensory signal-acquisition devices are card readers that acquire raw sensory signals from diagnostic cards inserted therein. These diagnostic cards are smart card-like devices modified for blood collection that contain sensory elements such as electrodes adapted to provide a raw sensory signal. The signal acquisition devices are modified smart card readers, which acquire the raw sensory data from an inserted smart card through a standardized contact arrangement and provide the raw data to data processing devices such as data acquisition cards. The system includes multiple remote ports for acquiring blood sensor signals. One or more card reader, when connected to a mobile general-purpose computer, can be converted into a complete mobile blood analyzer.